DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-15, a bio-based polymer substrate that is collagen and maleic anhydride/styrene copolymer as the hydrophobic absorptive polymer (X=CH, m=2, R_1=H, R_2=phenyl, the spacer is absent (p and q are both zero), Y is CH and z is maleic anhydride) for the in the reply filed on 7/15/09 is acknowledged. (It is noted that claim 28 was inadvertently grouped with Group I.) The traversal is on the ground(s) that Banes in view of Johnson does not teach the claimed invention of Group I and that the groups have a common special technical feature: the use of a hydrophobic cell culture substrate. Applicant also traverses the specie election for the hydrophobic absorptive polymer wherein the hydrophobic side chain R_1 is restricted to a particular group due to the flexibility and free rotation of the main chain, the role of the hydrophobic microcavity on the substrate surface and the variety of the hydrophobic surfaces. Applicant asserts that it is inappropriate to restrict a spacer to a particular spacer when taking into account the accessibility to a cell-substratum/substrate adhesion receptor.

This is not found persuasive because Banes in view of Johnson was not cited in the restriction requirement of 4/15/2009. Regarding Applicant's argument that there is a special technical feature uniting the groups, Applicant's argument has been considered but is non-persuasive in view of the following: the expression "special technical feature" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art (PCT

Rule 13.2). Thus, a feature found in the prior art cannot be considered to be a special technical feature. Satoh et al. (1998) teach that methyl vinyl ether-maleic anhydride copolymer (MMAC; (X=CH, m=2, R_1=H, R_2=methoxy, the spacer is absent (p and q are both zero), Y is CH and Z is maleic anhydride) was coated onto the well of an Immulon I microtiter plate (p. 97, left column, first paragraph under Materials and Methods). Nerurkar et al. (1984) teaches that an Immulon I microtiter plate is plastic (p. 110, left column under the heading of "Choice of plastic"). Thus, Satoh et al. disclose a plastic substrate coated with an copolymer that has a hydrophobic linear skeleton with a functional group that reacts with a protein or polypeptide. Hence, the alleged special technical feature is disclosed in the prior art.

Responding to Applicant's argument regarding the identity of R_1 and the spacer, Applicant has not indicated that all of the species are obvious variants or have the same characteristics as summarized in section 3 of the response. Since the species have different chemical structures, they reasonably have different in flexibility or the main chain and accessibility to a cell-substratum/substrate adhesion receptor in support of the species having distinct special technical features.

Claims 4-9, 12 and 16-34 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 7/15/2009.

The combination of collagen and MAST as the substrate and hydrophobic bind-absorptive polymer is allowable. Examination is extended to the next specie, the combination of albumin and a cellulose substrate.

Claims 1-3, 10, 11 and 13-15 are presented for examination.

Specification

The substitute specification filed 2/8/2006 has been approved for entry.

The specification is objected to because it contains amino acids sequences or refers to amino acid sequences that are not identified by SEQ. ID. Nos. (pages 11, 12, 16, 25, 26, 42, 43, 44, 45, 46, 47, 48, 49, 50, 52, 53, 54, ,55, 56 and 57).

It is noted that withdrawn claim 24 contains amino acid sequences that are not identified by SEQ ID Nos.

Claim Objections

Claims 3 is objected to because of the following informalities: Polybutylene is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 2, 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is rejected because it unclear what is encompassed by the term "bio-based". "Bio-based" is not an art-recognized term and the specification provides no definition.

Claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between the printed-wiring board or the artificial organ and the coating. That is, it is unclear what parts of a printed wiring board and an artificial organ would be coated with the polymer.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The claims are drawn to a cell culture substrate coated with a hydrophobic binding absorptive polymer having a hydrophobic linear skeleton and a functional group that can react to a protein or a peptide in a molecule. The substrate can be plastic. The polymer has the structure of formula I in claim 13. The polymer is a copolymer of maleic anhydride and a vinyl-based compound. The vinyl-based compound can be methyl vinyl ether.

Claims 1, 2, 10 and 13-15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Satoh et al. (1998) in light of Nerurkar et al. (1984).

It is noted that claim 1 recites an intended use, a cell culture substrate. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In the instant case, the recited limitation do not results in a structural difference between the claimed invention and the prior art.

Satoh et al. teach that methyl vinyl ether-maleic anhydride copolymer (MMAC; (X=CH, m=2, R_1=H, R_2=methoxy, the spacer is absent (p and q are both zero), Y is CH and Z is maleic anhydride, as in instant claims 1 and 13-15) was coated onto the well (instant claim 10) of an Immulon I microtiter plate (p. 97, left column, first paragraph under Materials and Methods). Nerurkar et al. (1984) teaches that an Immulon I microtiter plate is plastic (p. 110, left column under the heading of "Choice of plastic"; instant claim 2). Thus, Satoh et al. disclose a plastic substrate coated with an copolymer that has a hydrophobic linear skeleton with a functional group that reacts with a protein or polypeptide.

This rejection demonstrates that the generic claim is not allowable.

The disclosure by Nerurkar et al. is a supporting reference and properly used in a rejection under of U.S.C. 102 since it describes the composition of an Immulon 1 microtiter plate.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Soltys et al. (US 5,200,181) in light of Stakheeva-Kaverzneva (1943 (abstract only)) and Lean et al. (US 2004/0251135).

The claims are summarized supra. The substrate can comprise a bio-based material that is cellulose.

It is noted that claim 1 recites an intended use, a cell culture substrate. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In the instant case, the recited limitation do not results in a structural difference between the claimed invention and the prior art.

Soltys et al. teach that cellulose substrate coated with albumin (col. 3, lines 1-15).

Stakheeva-Kaverzneva teaches that albumin comprises dicarboxylic acid amino acids. Amino acids comprising two carboxylic acids groups are inherently aspartic acid and glutamic acid. Albumin also comprises cysteine groups which are functional groups that can react with proteins or peptides in molecules.

Lean et al. teaches that polypeptide backbones are hydrophobic because sodium dodecyl sulfate (SDS) binds to polypeptide backbones via hydrophobic interactions (section [0007]).

This disclosure meets the limitations of claim 1 because albumin consists of a linear hydrophobic skeleton having functional groups such as carboxylic acid groups and sulfhydryl groups that can react with proteins and peptides in molecules. Albumin is coated onto a cellulosic substrate. Cellulose is a bio-based polymer (instant claims 2 and 3).

The disclosures by Stakheeva-Kaverzneva and Lean et al. are supporting references and properly used in a rejection under of U.S.C. 102 since they describe the amino acid composition of albumin and the hydrophobic nature of the polypeptide backbone, respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN HANLEY whose telephone number is (571)272-2508. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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